THE GAMBIA

SELECTED ISSUES

January 2024

This paper on The Gambia was prepared by a staff team of the International Monetary Fund as background documentation for the periodic consultation with the member country. It is based on the information available at the time it was completed on December 18, 2023.

Copies of this report are available to the public from

International Monetary Fund • Publication Services
PO Box 92780 • Washington, D.C. 20090
Telephone: (202) 623-7430 • Fax: (202) 623-7201
E-mail: publications@imf.org Web: http://www.imf.org
Price: $18.00 per printed copy

**International Monetary Fund
Washington, D.C.**

INTERNATIONAL MONETARY FUND

THE GAMBIA

SELECTED ISSUES

December 18, 2023

Approved By
African Department

Prepared by the IMF Gambia Team

CONTENTS

FIGURES

TABLE

THE GAMBIA: MACROECONOMIC AND DISTRIBUTIONAL IMPLICATIONS OF GENDER

FIGURES

TABLES

THE GAMBIA: DOMESTIC AND EXTERNAL DRIVERS OF INFLATION[1]

This paper investigates the drivers of headline inflation and the degree of exchange rate passthrough (ERPT) in The Gambia over the period 2014-2023. The analysis highlights the decisive long-term roles of global prices of commodities (food, oil and fertilizer), the exchange rate, and the domestic output gap. The short-run dynamics of inflation points to the roles of global food price and the second-round effects of changes in food prices and the output gap. Monetary policy has the potential to tame inflation in the short run provided the monetary policy rate is adjusted rapidly and boldly. Lastly, there is evidence of an asymmetric ERPT to domestic prices, and the size of currency depreciation matters for inflation dynamics.

A. Literature Review

1.   There is a wealth of theoretical and empirical literature on the sources of inflation in developing countries. Demand-pull factors, external factors, and/or cost-push/inertial factors have received more attention in explaining the dynamics of inflation in specific countries or groups of countries. Demand-pull factors have been emphasized by two theories of inflation. First, *fiscal-monetary doctrines* of inflation, also known as the "fiscal view" of inflation, stress that inflation is caused by fiscal imbalances. Persistent fiscal deficits and high public debt lead to high inflation by triggering excess aggregate demand, directly or ultimately, through either higher money growth (as in Sargent and Wallace (1981)'s "fiscal dominance" hypothesis of monetary policy) or perceived wealth effects and lack of confidence by the public in fiscal solvency (as in the "fiscal theory of the price level"; see Leeper, 1991; Woodford, 1995; and Sims, 1994).[2] Second, the *output gap model*, also known as the Philipps curve framework (Philips, 1958; Samuelson and Solow, 1960), is the other demand-pull theory of inflation. Positive (negative) output gaps, i.e., the differences between actual and potential output, reflect an excess (deficient) level of economic activity over potential output, i.e., an overheated (underheated) economy, and hence rising (falling) inflation.

2.   External factors include movements in exchange rates, the prices of imported food and energy products, the global output gap, and remittance inflows. The "balance of payments view" emphasizes the inflationary role of currency depreciation in countries subject to large external shocks (Montiel 1989). Currency depreciation affects domestic inflation directly by changing the price of imports in domestic currency (first-round effect) and indirectly (depending on how this initial shock is transmitted to other sectors) through changes in costs and inflation expectations (second-round effects). Increases in international oil prices cause jumps in the CPI, directly through the presence of oil products in the consumer basket and indirectly through the effects on the

[2] Under the fiscal theory of price level, higher bond-financed deficits lead to higher equilibrium price level through their effects on private sector wealth and aggregate demand, whereas money plays no (or a lesser) role.

marginal costs of production of domestic firms. If exchange rates are flexible, there will be a currency depreciation (given the higher oil import bill), which will feed back into the CPI. As to global food prices, they are more closely correlated (than oil prices) with headline CPI in EMDEs given the large weight of food in households' consumption (Catao and Chang, 2015). For a net food importer, higher global food prices lead to nominal currency depreciation (given the higher import bill) and second-round effects on wages and prices of other goods. Lastly, remittances are an important external factor with potential aggregate demand and inflationary effects in EMDEs; see, for instance, Chami and others (2006) and Ball, Lopez, and Reyes (2013).

3. **Cost-push and inertial factors include exogenous domestic food price and wage shocks, and backward-looking indexation mechanisms.** Exogenous domestic food price and wage shocks lead to inflation if monetary policy is accommodative. Likewise, backward-looking indexation mechanisms, whereby current wages are adjusted to lagged inflation, may render inflation strongly persistent and increase the cost of disinflation (Dornbusch and Fischer, 1993; Blanchard and Gali, 2007).

4. **Empirical research confirms the role of both domestic and external factors for inflation dynamics in EMDEs.**[3] A recent comprehensive study by Ha, Ivanova, Montiel, and Pedroni (2019) highlights the sizable role global factors play in driving inflation in LICs. Their main findings are as follows. First, although LIC inflation has declined sharply since the mid-1990s, the level and volatility of headline inflation have remained above those in AEs. Second, core inflation in LICs was more susceptible to external shocks—in particular, to global core, food, and energy prices—than in the other country groups.[4] Third, domestic characteristics appear to matter for determining the responsiveness of inflation to external shocks. Fourth, ERPT to core inflation in LICs is much larger than for the other country groups.

B. Stylized Facts

5. **Stylized facts and the limited studies on The Gambia point to the role of both domestic and external drivers for inflation dynamics.** Alagidede, Coleman, and Cuestas (2012) find that Gambia's inflation is persistent despite being mean reverting. Figure 1 suggests potential links of domestic inflation with global food and fertilizer (phosphate) prices, currency depreciation, and the domestic output gap. The Gambia is indeed a net importer of essential foods and energy. The weight of food items and non-alcoholic beverages in The Gambia's CPI basket is around 50 percent, explaining the co-movement between global food inflation and headline inflation in The Gambia. Unlike international food prices, however, the transmission of movements in international energy prices into domestic prices is somewhat complex, as the prices of fuel products (and

---

[3] See, for instance, Coe and McDermott (1997), Loungani and Swagel (2001), Barnichon and Peiris (2008), Nguyen et al. (2017), and Baldini and Poplawski-Ribeiro (2011) for studies focusing on LICs and Africa.

[4] Around ¾ of the variation in domestic core inflation rates among LICs was accounted for by external inflation shocks, and very little by shocks to domestic core inflation. Global food and energy price shocks account for another 13 percent of core inflation variation in LICs—50 percent more than in AEs and 20 percent more than in non-LIC EMDEs.

transport services) are highly administered in The Gambia. The co-movement between currency depreciation and domestic inflation, which is also impacted by the high dependence on imports, appears stronger over the most recent period. Finally, there appears to be some co-movement between headline inflation and the domestic output gap, with the latter able to capture the impact of fiscal and monetary policies or remittances, a key determinant of private consumption and investment in The Gambia.

Figure 1. Headline Inflation and Drivers

Consumer Price Inflation and Global Food Price Inflation, 2012-23

Sources: Gambian authorities and IMF staff estimates.

Inflation and Global Phosphate Fertilizer Inflation, 2014-23

Inflation and Currency Depreciation, 2011-23

Inflation and Domestic Output Gap, 2014-23
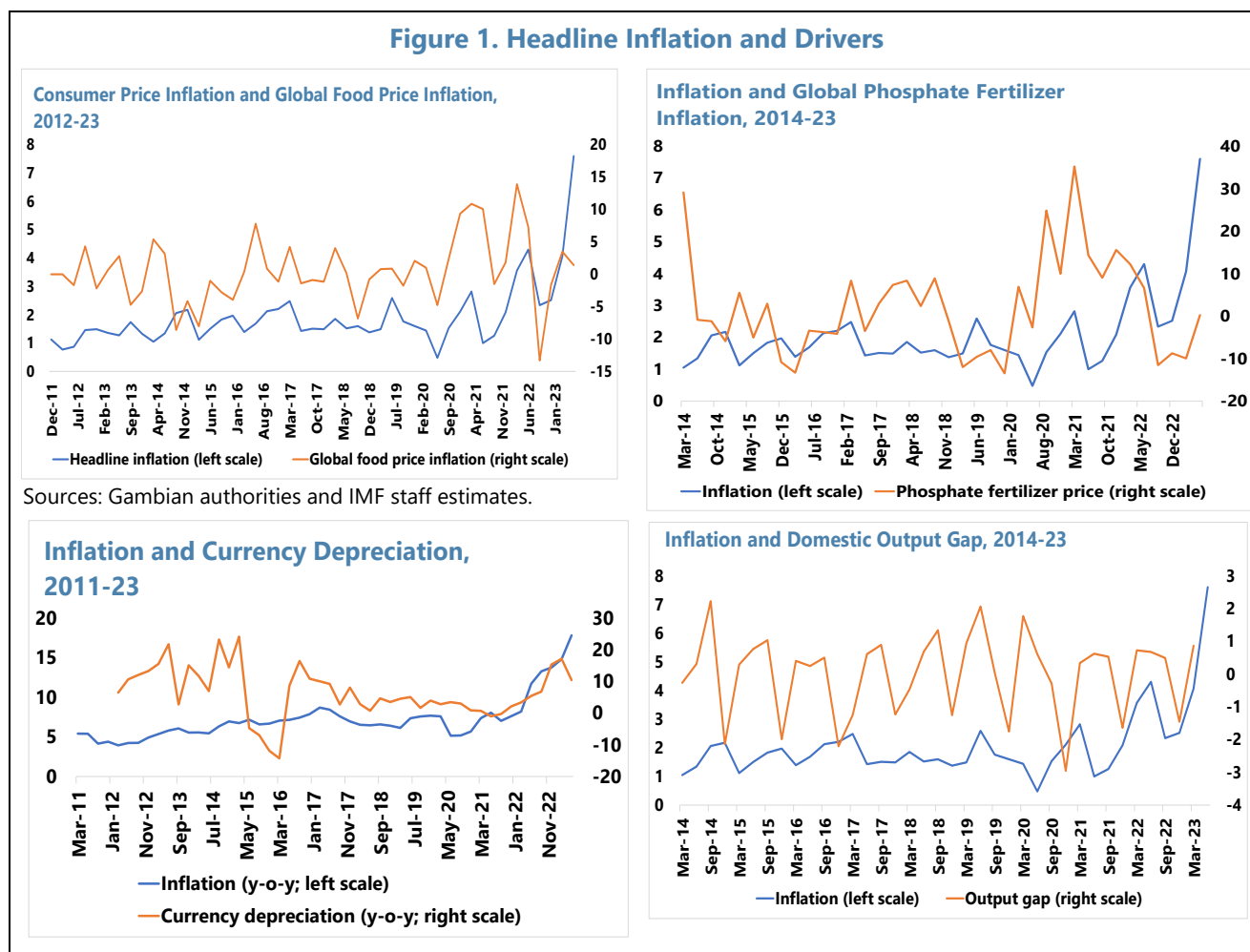
6.   Headline inflation increased in 2021-2022 but monetary policy has lagged the rise in domestic inflation. As shown in Figure 2, inflation started to rise in Q1 2021 and after the eruption of the Russian war in Ukraine in March 2022, inflation accelerated in Q2 2022. However, monetary policy was slow to react, with the CBG keeping the policy rate at 10 percent – a level reached in March 2020 during the deflationary shock of the COVID19 pandemic – until May 31, 2022, when the Monetary Policy Committee raised the policy rate to 11 percent. More importantly, the magnitude of that adjustment in the policy rate and those that followed were limited, such that the policy rate in real terms fell into negative territory as of Q2 2022. From June 2022 to June 2023, the real policy rate was on average negative 0.9 percent.

Figure 2. Inflation and Monetary Policy Rates

Sources: Gambian authorities and IMF staff estimates.
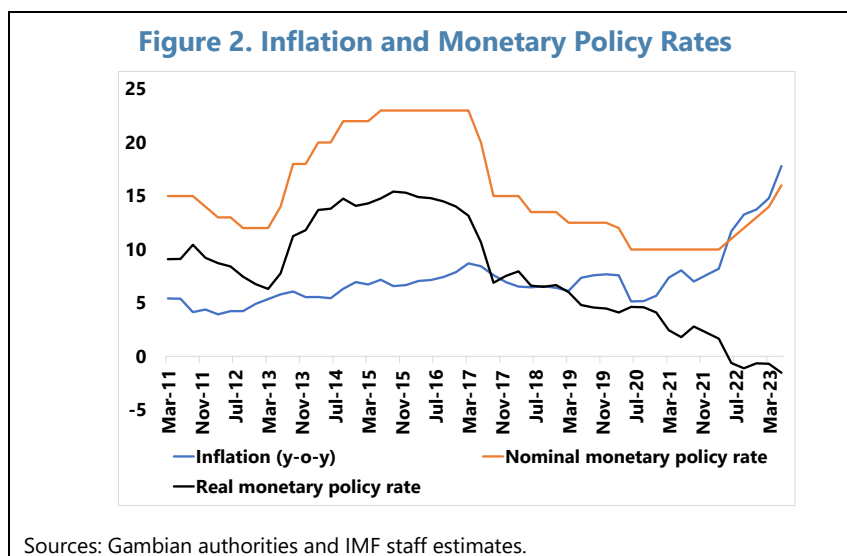
C. Empirical Analysis

7.   We perform three types of econometric modeling to study the drivers and dynamics of inflation in The Gambia. First, we perform ordinary least squares (OLS) regressions and quantile regressions using data on inflation and its potential domestic and external drivers over the period 2011-2023. Second, to further investigate the long- and short-term determinants of inflation, we perform non-linear cointegration analysis and error-correction modelling using the non-linear autoregressive distributed lag (NARDL) bounds testing procedure.[5] Third, we run local projection models (Jordà, 2005) under three scenarios to generate the dynamic cumulative response of domestic prices to exchange-rate movements.

8.   OLS results suggest inflation in The Gambia is highly persistent, impacted significantly by currency depreciation, as well as global food and fertilizer inflation, but only marginally by the domestic output gap (Table 1).[6] First, inflation appears to be highly persistent, with the coefficients of the first and fourth lags of inflation highly significant, and their sum not statistically different from unity. This result is suggestive of the existence of inertial factors. Second, the coefficient of the domestic output gap is not significant; however, a quantile regression (with the quantile set at 80 percent) of our preferred model shows a positive and statistically significant coefficient of the domestic output gap at the 10 percent level, suggesting that the output gap matters at high levels of inflation. Third, currency depreciation and potassium fertilizer price inflation (both at lag one) as well as phosphate fertilizer price inflation (with lag two) impact inflation

---

[5] Pesaran, Shin, and Smith (2001) and Shin, Yu, and Greenwood-Nimmo (2014).

[6] The preferred OLS regression is as follow: Inflation = *constant term* + a1*lagged inflation* + a2*output gap* + a3*global food inflation* + a4*global (phosphate, potassium, and nitrogen) fertilizer inflation* + a5*rate of change in the monetary policy rate* + a6*squared rate of change in the monetary policy rate* + a7*currency depreciation* (y-o-y) + *error term*.

positively and significantly.[7] Fourth, the combined effect of the rate of change of the policy rate and its square is negative and statistically significant, suggesting that monetary policy in The Gambia, with sufficiently more rapid adjustments in the nominal policy rate, is potentially effective in taming high inflation.

9. **Non-linear co-integration analysis highlights the decisive long-term roles of global food prices, the exchange rate, and the domestic output gap.** Based on unit root test results (Table 2), headline inflation, global food prices, the dalasi per US dollar exchange rate, and the domestic output gap are first-difference stationary and therefore we can test for co-integration in the NARDL framework. Non-linear cointegration between inflation and its three determinants is confirmed at the 1 percent level over the period 2014Q1-2023Q1 (Table 3). In the long run, inflation is therefore mainly driven by world food prices, the exchange rate, and the output gap, with significant asymmetric inflationary effects for the latter two variables (Table 4).[8] First, an increase in global food prices of 10 percent leads to an increase of 0.8 percentage points in the quarterly rate of inflation. This magnitude is reasonable since it's equivalent to an increase of 3.4 percentage points in the annualized rate of inflation. Second, the long-run coefficients of positive and negative changes of the exchange rate are 0.045 (significant at 5 percent critical level) and -0.036 (not significant at 5 percent critical level), respectively. Thus, a 10 percent depreciation of the exchange rate leads to 0.45 percentage point increase in the quarterly rate of inflation (i.e., 1.8 percentage point increase in the annualized rate of inflation), but an appreciation of the exchange rate does not appear to reduce inflation. Finally, the long-run coefficients of positive and negative changes of the output gap are 0.064 and 0.080, respectively.

10. **The short-run dynamics of inflation is driven by global food price inflation and the second-round effects of global food price inflation and of changes in the domestic output gap** (Table 5)**.** The error-correction coefficient ($ECT(-1)$) is negative (-1.176) and very significant, confirming the existence of cointegration. The change in the (natural logarithm of) global food prices is the only variable affecting contemporaneously the short-run dynamics of inflation. The short-run impact (0.106) looks stronger than its long-run value (0.8). Three-quarter lagged changes in global food prices and in the output gap, as well as one- to two-quarters lagged changes in the

---

[7] The OLS coefficient of the fertilizer nitrogen inflation (with lag one) is significant but with a negative sign. However, under the quantile regression (with the quantile set at 80 percent) of our preferred model, it is no longer statistically significant. Also, the fertilizer phosphate inflation (with lag two) is not statistically under the quantile regression (with the "tau" set at 80 percent), suggesting that in periods of high inflation, only the fertilizer potassium inflation (with lag "one") matters for inflation in The Gambia.

[8] We started with the linear ARDL model but found no evidence of cointegration, possibly due to the existence of a non-linear relationship among the variables. The non-linear ARDL approach confirmed cointegration among inflation, global food prices, the exchange rate, and the output gap (Table 3). There appeared numerically some evidence of asymmetric inflationary effects from all three regressors. (The long-run coefficients of positive and negative changes of the food prices were 0.075 (significant at 1 percent critical level) and 0.035 (not significant at conventional critical levels), respectively. Thus, a 10 percent increase in the food price index causes a rise of 0.75 percentage points in the quarterly rate of inflation, but a decrease in the food price index does not necessarily induce a reduction in domestic inflation.) Nonetheless, a formal symmetry test for the long-run coefficients of positive and negative changes of food prices was not statistically rejected, but symmetry was rejected not only for the positive and negative coefficients of the exchange rate but also for the positive and negative coefficients of the output gap. In other words, the asymmetric inflationary effects of the exchange rate and the output gap were statistically stronger.

output gap affect the short-run dynamics of inflation significantly but with a negative sign.[9] These negative signs likely reflect second-round inflationary effects of initial shocks to food prices and the output gap on wages and prices of other goods as well as (inflationary) expectations. Finally, we assess the effectiveness of monetary policy by introducing in the error correction model the change in the level of the monetary policy rate (ΔMPR) and the change in its square (ΔMPR^2). Their individual effects are positive (0.84) and negative (-2.26), respectively, and they are not significant.[10] Nonetheless, since their short-run combined effect is negative (-1.4), this result suggests there's potential effectiveness of monetary policy implemented through rapid and bold adjustments in the policy rate to tame inflation.

11.   Local projection models confirm evidence of asymmetric ERPT, and the size of the currency depreciation matters for inflation dynamics in The Gambia.[11] Under the baseline model, a one percentage point increase in the rate of depreciation of dalasi against the US dollar leads to an increase in inflation by 0.15 percentage points within the first year, and 0.24 percentage points after two years. We also find that the ERPT to inflation is asymmetric in The Gambia (Figure 3), reaching 0.3 on average twelve months after the shock and 0.4 two years after during episodes of depreciation. In contrast, prices remain muted in periods of currency appreciation. This result suggests that prices may not come down when the dalasi strengthens after periods of depreciation. Lastly, there's evidence of nonlinearity in the impact of exchange rate depreciation on inflation. Small currency depreciations are almost inconsequential for inflation. However, at higher levels of currency depreciation (i.e., depreciation of the dalasi vis-à-vis the US dollar of above 15 percent) the resulting inflation is not only disproportionately larger in the first year (0.46), but it continues to be high well into the second year after the shock (0.36). Thus, larger currency depreciations present considerable risks of inflation de-anchoring in The Gambia, especially if the credibility of the CBG is perceived as weak.

---

[9] These results also justify the choice of four lags length for our NARDL analysis.

[10] The p-value of the F statistic is 0.1718 which is more than the 5 percent level of significance and therefore we fail to reject the null hypothesis. Under the null hypothesis ΔMPR and ΔMPR^2 are jointly insignificant.

[11] Jordà (2005) estimates impulse response functions directly from local projections. Stock and Watson (2007) and Auerbach and Gorodnichenko (2013) consider this approach as a flexible alternative to the dynamic restrictions embedded in ARDL specifications.

Figure 3. Exchange Rate Pass-Through to Inflation
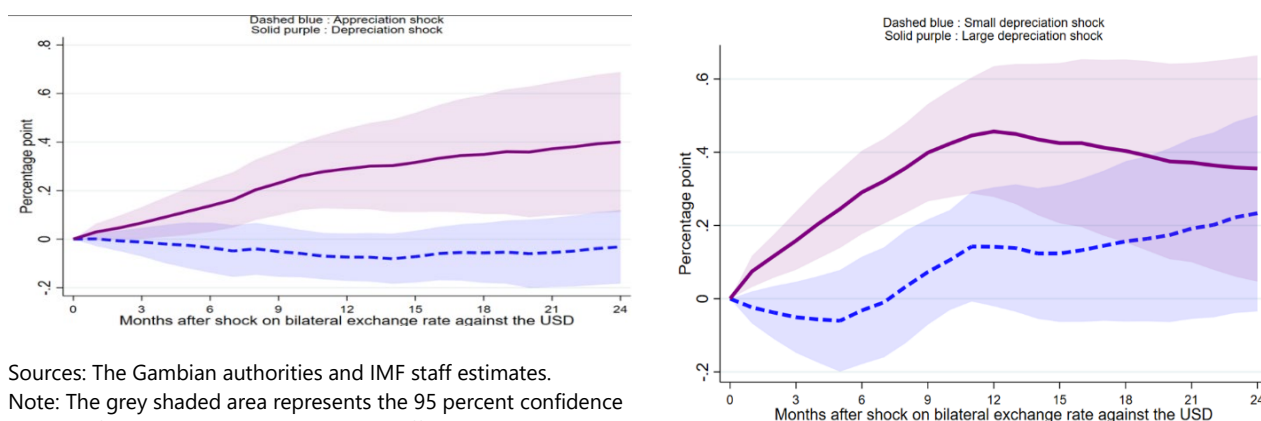
Sources: The Gambian authorities and IMF staff estimates.
Note: The grey shaded area represents the 95 percent confidence interval of the estimated pass-through coefficients.

Table 1. The Gambia: OLS Regressions of Inflation and Its Determinants

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Inflation(t-1)	0.491***	0.455***	0.446***	0.328**	0.361***	0.399***
	(0.114)	(0.112)	(0.117)	(0.095)	(0.067)	(0.101)
Inflation(t-4)	0.718***	0.812***	0.808***	0.836***	0.733***	0.771***
	(0.126)	(0.135)	(0.139)	(0.104)	(0.074)	(0.106)
Growth of MPR		0.011*	0.011.	0.014**	0.009**	0.009**
		(0.005)	(0.006)	(0.004)	(0.003)	(0.003)
Square of Growth of MPR		-0.026.	-0.027.	-0.036**	-0.033***	-0.032**
		(0.015)	(0.016)	(0.012)	(0.009)	(0.009)
Growth of Nominal XR(t-1)			0.005	0.022*	0.022*	0.022*
			(0.014)	(0.010)	(0.008)	(0.008)
Growth of Global Food Prices				0.077***	0.075***	0.076***
				(0.017)	(0.013)	(0.013)
Growth of Nitrogen Fertilizer Prices(t-1)				-0.015***	-0.012***	-0.013***
				(0.004)	(0.003)	(0.003)
Growth of Potassium Fertilizer Prices(t-1)				0.015**	0.012**	0.012**
				(0.005)	(0.003)	(0.004)
Growth of Phospate Fertilizer Prices(t-2)				0.017*	0.017**	0.018**
				(0.008)	(0.005)	(0.006)
Output Gap					0.008	0.009
					(0.005)	(0.005)
Covid Dummy	-0.021**	-0.022**	-0.021**	-0.016**	-0.015***	-0.015***
	(0.007)	(0.007)	(0.007)	(0.005)	(0.004)	(0.004)
Constant						-0.001
						(0.003)
N	43	43	42	42	37	37
R^2	0.918	0.927	0.927	0.966	0.982	0.876

Standard errors in parentheses
$p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 2. The Gambia: ADF Unit Root Tests

ADF test results	Level	First difference
Inflation	-0.14	-6.71***
Global food price index	-0.90	-5.38***
Exchange rate level	-3.44*	-8.86***
Output gap	-1.70	-8.62***

Notes:

1. Each regression contains both the intercept and the trend terms.

2. The optimal lag structure of the ADF test is chosen based on the modified Akaike Information Criterion.

3. *, **, and *** indicate the significance at 10 percent, 5 percent, and 1 percent, respectively

Table 3. The Gambia: Bounds Test for Cointegration in Non-Linear Specification

Dependent variable: Δ(*DLCPI*)	*F*-PSS[2]	95% lower bound	95% upper bound	99% lower bound	99% upper bound	Cointegration Result
NARDL with no imposed symmetry for food prices, exch. rate and the output gap	7.17***	2.97	4.50	4.27	6.21	Yes
NARDL with imposed long-run symmetry for food prices[1]	8.21***	3.13	4.61	4.54	6.37	Yes

1. The exact specification of asymmetric model with imposed long-run symmetry imposed for global food prices is presented in Table 5.

2. *F*-PSS indicates the *F*-PSS statistic testing the null hypothesis of no cointegration.

Note: *, **, and *** indicate the significance at 10 percent, 5 percent, and 1 percent, respectively.

Table 4. The Gambia: NARDL Estimation Results for the Long-Run Cointegrating Vector

Variable	Coefficient	p-Value	t-Statistic
Dependent variable: DLCPI (Inflation)			
Ln FoodPI	0.083634	0.0000	8.306573
Ln EXR(-1)$^+$	0.044767	0.0164	2.554707
Ln EXR(-1)$^-$	-0.035928	0.0518	-2.031153
Output gap$^+$	0.063966	0.0321	2.255042
Output gap$^-$	0.079619	0.0139	2.624906

Notes:

1. The NARDL model contains an unrestricted constant and no trend (Case 3). The trend term was non-significant under Case 5 (unrestricted constant and unrestricted trend).

2. The optimal lag structure of the NARDL model is chosen automatically based on the Akaike Information Criterion (AIC).

3. *, **, and *** indicate the significance at 10 percent, 5 percent, and 1 percent, respectively

Table 5. The Gambia: NARDL Estimation Results for the Parsimonious Model

Variable	Coefficient	Standard Error	t-Statistic	p-Value
Dependent variable: $\Delta(DLCPI)$ (change in the rate of inflation)				
ECT_{t-1}	-1.176***	0.148	-7.932	0.000
$\Delta(Ln\ FoodPI_t)$	0.106***	0.015	7.235	0.000
$\Delta(Ln\ FoodPI_{t-1})$	-0.0186	0.015	-1.221	0.235
$\Delta(Ln\ FoodPI_{t-2})$	-0.0086	0.015	-0.584	0.565
$\Delta(Ln\ FoodPI_{t-3})$	-0.080***	0.017	-4.704	0.000
$\Delta(Output\ gap_t)$	-0.0154	0.010	-1.578	0.128
$\Delta(Output\ gap_{t-1})$	-0.088***	0.017	-5.068	0.000
$\Delta(Output\ gap_{t-2})$	-0.052***	0.015	-3.468	0.002
$\Delta(Output\ gap_{t-3})$	-0.030***	0.011	-2.860	0.009
Constant	-0.443***	0.056	-7.928	0.000

R-squared	0.861	Mean dependent var		0.001
Adjusted R-squared	0.807	S.D. dependent var		0.008
S.E. of regression	0.004	Akaike info criterion		-8.225
Sum of squared residuals	0.000	Schwarz criterion		-7.772
Log likelihood	145.716	Hannan-Quinn criterion		-8.073
F-statistic	15.871	Durbin-Watson statistic		1.908
Prob (F-statistic)	0.000			

Notes:

1. The NARDL model includes an unrestricted constant and no trend (Case 3). The trend term was non-significant under Case 5 (unrestricted constant and unrestricted trend).

2. The optimal lag structure of the NARDL model is chosen automatically based on the Akaike Information Criterion (AIC).

3. *, **, and *** indicate the significance at 10 percent, 5 percent, and 1 percent, respectively.

References

Alagidede, P., S. Coleman, and J. C. Cuestas. 2012. "Inflationary Shocks and Common Economic Trends: Implications for West African Monetary Union Membership," *Journal of Policy Modeling*, Vol.34 (3), p.460-47.

Baldini, A., and M. Poplawski-Ribeiro. 2011. "Fiscal and Monetary Determinants of Inflation in Low-Income Countries: Theory and Evidence from Sub-Saharan Africa," *Journal of African Economies*, Vol. 20, number 3, pp. 419–62.

Ball, C. P., C. Lopez, and J. Reyes. 2013. "Remittances, Inflation, and Exchange Rate Regimes." *The World Economy*,

Barnichon, R., and S. Peiris. 2008. "Sources of Inflation in Sub-Saharan Africa," *Journal of African Economies*, 17(5).

Blanchard, O., and J. Gali. 2007. "Real Wage Rigidities and the New Keynesian Model." *Journal of Monetary Economics* 39 (1): 35-65.

Bussière, M., 2007. Exchange Rate Pass-Through to Trade Prices: The Role of Non-Linearities and Asymmetries. European Central Bank, Working Paper Series, 822.

Caselli, F., Roitman, A., 2019. Nonlinear Exchange-rate Pass-Through in Emerging Markets. *Journal of International Finance*.

Catao, L., and R. Chang. 2015. "World Food Prices and Monetary Policy." *Journal of Monetary Economics* 75: 69–88.

Chami, R., T. F. Cosimano, and M. T. Gapen. 2006. "Beware of Emigrants Bearing Gifts: Optimal Fiscal and Monetary Policy in the Presence of Remittances," Working Paper, WP (Washington, DC: IMF).

De Loecker, J., J. Eeckhout, and G. Unger. 2018. The Rise of Market Power and the Macroeconomic Implications. NBER Working Paper 24768, National Bureau of Economic Research, Cambridge, MA.

Dornbusch, R., and S. Fischer. 1993. "Moderate Inflation," *The World Bank Economic Review*, Vol 7 (January), pp 1-44.

Gopinath, G., 2015. The International Price System. National Bureau of Economic Research Working Paper 21646.

Ha, J., A. Ivanova, P. Montiel, and P. Pedroni. 2019. "Inflation in Low Income Countries," in Ha, J., M. A. Kose, and F. Ohnsorge. 2019. *Inflation in Emerging and Developing Countries: Evolution, Drivers, and Policies*, Washington, D.C.: World Bank Group.

International Monetary Fund (IMF), 2019. The Rise of Corporate Market Power and Its Macroeconomic Effects. World Economic Outlook, Washington, DC, April.

Jordà, O. 2005. "Estimation and Inference of Impulse Responses by Local Projections." *The American Economic Review*, Vol.95 (1), p.161-182.

Kemoe, L., M. Mbohou Mama, H. Mighri, and S. Quayyum. 2023. "Exchange Rate Movements and Inflation in Sub-Saharan Africa," IMF WP (forthcoming).

Leeper, E. M. 1991. "Equilibria Under 'Active' and 'Passive' Monetary and Fiscal Policies." *Journal of Monetary Economics* 27 (1): 129–147.

Loungani, P., and P. Swagel. 2001. "Sources of Inflation in Developing Countries." IMF Working Paper Vol. 01/198

Montiel, P. 1989. "An Empirical Analysis of High-Inflation Episodes in Argentina, Brazil, and Israel," International Monetary Fund, *Staff Papers*, Vol. 36, pp. 527-49.

Nguyen, A. D. M., J. Dridi, F. D. Unsal, and O. H. Williams. 2017. "On the Drivers of Inflation in Sub-Saharan Africa." *International Economics* 151 (C): 71-84.

Pesaran, M. H., Y. Shin, and R. Smith. 2001. "Bounds Testing Approaches to the Analysis of Level Relationships." *Journal of Applied Econometrics*, 16(3), 289–326.

Philips, R. 1958. "The Relation between Unemployment and the Rate Change of Money Wage Rates in the United Kingdom. " *Economica*, vol. 25, pp. 283-299.

Razafimahefa, I. F. 2012. "Exchange Rate Pass-Through in Sub-Saharan African Economies and its Determinants." Washington, DC: IMF Working Paper WP/12/141.

Samuelson, P., and R. Solow. 1960. Analytical Aspects of Anti-Inflation Policy. *The American economic review*, 1960, Vol.50 (2), p.177-194

Sargent, T. J., and N. Wallace. 1981. "Some Unpleasant Monetarist Arithmetic." *Federal Reserve Bank of Minneapolis Quarterly Review*, 5(3), 1–7.

Shin, Y., B. Yu, and M. J. Greenwood-Nimmo. 2014. "Modelling Asymmetric Cointegration and Dynamic Multipliers in a Nonlinear ARDL Framework." In Festschrift in Honor of Peter Schmidt, edited by W. C. Horrace and R. C. Sickles. New York (NY): Springer Science & Business Media.

Sims, C. A. 1994. "A Simple Model for Study of the Determination of the Price Level and the Interaction of Monetary and Fiscal Policy." *Economic Theory* 4 (3): 381–399.

Woodford, M. 1995. "Price Level Determinacy without Control of a Monetary Aggregate," *Carnegie-Rochester Conference on Public Policy*, Vol. 43 (December), pp. 1-46.

# THE GAMBIA: CLIMATE CHANGE VULNERABILITIES AND STRATEGIES[1]

The Gambia is highly vulnerable to the impacts of climate change, including flooding, storm, droughts, and coastal erosion, which can trigger food insecurity and losses of tourism and fishing. The authorities have developed several strategies, including The National Climate Change Policy (NCCP), The Gambia 2050 Climate Vision, and The Gambia's Long-Term Climate-Neutral Development Strategy 2050 (LTS), aiming for net-zero carbon emissions by 2050. Although The Gambia is a small contributor to global emissions, mitigation policies to expand renewable energy have also co-benefits for energy security and development. Strengthening adaptive capacity require improvements in land management, crop diversification, and irrigation systems to enhance resilience and ensure food security.

A.   Vulnerabilities to Climate Hazards

1.   The Gambia's geographical features make it vulnerable to the effects of climate change. Over the past sixty years, the average temperature has risen by 1.0°C, an average rate of 0.19°C per decade.[2] The IPCC (2022) has estimated that in West Africa, temperature may rise by 3–6 °C by the end of the 21st century and sea levels are anticipated to increase by 0.26–0.55 m even under low-emission scenario. The Gambia's coastal zone, consisting of 80 km of open ocean coast and 200 km sheltered coast, is prone to flooding and erosion. The predicted sea level rise threatens to inundate Banjul and its port, groundwater resources and ecosystems. The temperature and sea-level rises will also pose higher risks of flooding, droughts, coastal erosion, food insecurity, damage to infrastructures, and losses to tourism and fishing. The Gambia is ranked 106th out of 191 countries with the middle-ranged risk according to Climate-driven INFORM Risk Indicator 2022.[3]

2.   As a small state, The Gambia is facing frequent natural disasters of flooding, storm, and droughts. Over the past three decades, there has been at least one such disaster that struck the country approximately every two years. Flooding accounts for more than half of the events. Across the western African region, the Gambia is in the middle of the national disaster risks. Although droughts were much less frequent than flooding and storms, the affected population is much larger due to a broader scale of impact. The drought

Figure 1. Total Number of Natural Disasters Occurrence from 1990 to 2023
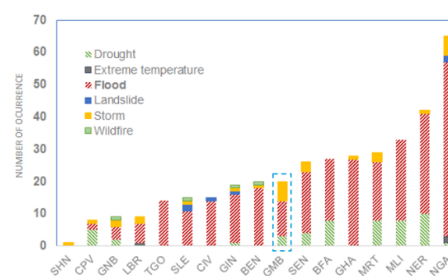
Source: The EM-DAT database and IMF staff estimates.
Note: The data are for selected western African countries from 1990 to 2023. The most frequent six types of natural disasters across countries are listed.

---

[1] Prepared by Xuehui Han and Koralai Kirabaeva, with comments from Balazs Stadler and Sylke von Thadden-Kostopoulos.

[2] Gambia, The - Climatology | Climate Change Knowledge Portal (worldbank.org)

[3] https://climatedata.imf.org/datasets/7cae02f84ed547fbbd6210d90da19879/explore

in the country in 2012 has affected 428,000 people, one out of five of the total population, while the storm in 2021 affected 16,849 people and the flood in 2022 affected 17,201 people (EM-DAT database, 2023).[4]

3.   Natural disaster-induced economic loss could be far reaching and huge. From a cross-country analysis, the GDP per capita after large natural disasters can be substantially and persistently lower than the would-be scenario of no disasters – 2-5 percent lower in the four years after the disasters; while the public debt is 6 percent of GDP higher in the three years after the disasters (IMF, 2019). Natural disasters also generate significant social costs in terms of lost lives, worsening food insecurity, and deterioration in human capital, with longer-term ramifications for growth and poverty in poorer countries (IMF, 2016). Cheng and Han (2022) have estimated that the economic loss due to damage of flooding on infrastructure can reach 3.8 percent of GDP when the probability of flooding is one third per year (once every three years). In the past three decades, the probability of flooding in The Gambia is higher than one half, which implies an even larger loss. Direct assessments of economic damages caused by natural disasters for the Gambia is limited. However, Koks et al. (2019) recognize The Gambia among the top twenty countries with the highest multi-hazard Expected Annual Damages (EAD) relative to the country's GDP, attributable to the exposure of road and railway infrastructure, at above 0.2 percent of GDP annually. The commonly sourced EM-DAT database that provide economic damage estimates for countries does not provide such assessments for The Gambia. Thus, a local projection regression is used to assess the economic loss in percent of GDP for The Gambia. The real GDP growth remains 2.0–3.1 percent lower than the pre-disaster level in the five years after the natural disasters hit.

Figure 2. Economic Loss in The Gambia After Natural Disasters, 1990-2023
(Percent)
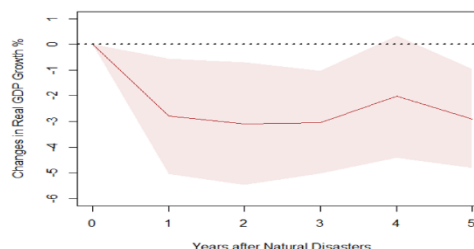
Source: IMF WEO April 2023, the EM-DAT database and IMF staff estimates.
Note: The data is from 1990 to 2023. A local projection regression is employed to estimate the real GDP growth loss after the natural disasters. The left-hand-side variable is real GDP growth in t+h minus the real GDP growth in t. The right-hand side variables include one period and two period lagged real GDP growth as control variables and the total number of natural disasters, including flood, storm, drought, epidemic, and insect infestation.
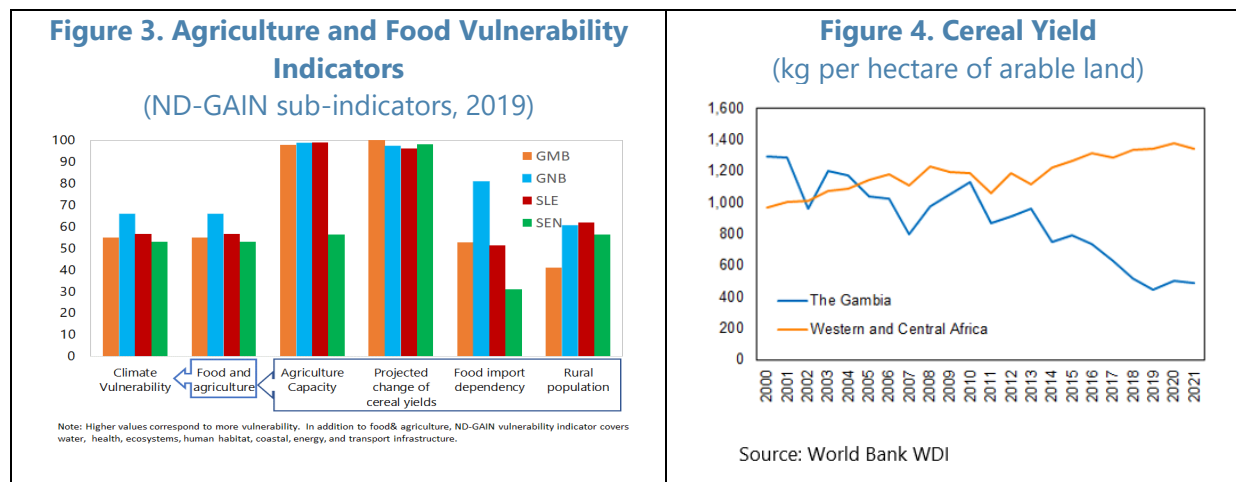
4.   Agriculture is the most vulnerable sector to the climate change while it is The Gambia's main source of income for a significant share of households. Agriculture covers about quarter of the total output and about a half of total employment. Agricultural production is largely dependent on rain-fed subsistence farming which is inhibited by various climate factors including rainfall variability, increased temperatures, and sea level rise.[5] The country also depends on imports of many agriculture products as the sectors is challenged by poor infrastructure, soil fertility depletion, and low private investment. The Gambia is particularly vulnerable to a decline in cereal yields. In the past two decades, while the average cereal yields in Western and Central African

---

[4] The population is 2.06 million in 2012 reported by World Bank.

[5] Climate-Smart Agriculture in the Gambia (2018) https://reliefweb.int/report/gambia/climate-smart-agriculture-gambia

countries have remained steady and slightly increased, the cereal yields in The Gambia have continuously declined.

Figure 3. Agriculture and Food Vulnerability Indicators	Figure 4. Cereal Yield

Figure 3. Agriculture and Food Vulnerability Indicators
(ND-GAIN sub-indicators, 2019)

Note: Higher values correspond to more vulnerability. In addition to food& agriculture, ND-GAIN vulnerability indicator covers water, health, ecosystems, human habitat, coastal, energy, and transport infrastructure.

Figure 4. Cereal Yield
(kg per hectare of arable land)

Source: World Bank WDI

B.   Climate Strategy and Planning

5.   The National Climate Change Policy (NCCP) of the Gambia is one of the early climate-related policies developed. The NCCP (2016) sets the country's institutional arrangements for coordination and mainstreaming, outlines an integrated approach to resource mobilization, and develops a policy direction for human resource development, while emphasizing the links between climate change adaptation and disaster risk reduction. The NCCP outlines the approach to develop the implementation framework for the Policy through the subsequent National Climate Change Response Strategy and Action Plan. The goal of the NCCP is, by 2025, to achieve the mainstreaming of climate change into national planning, budgeting, decision-making, and program implementation, through effective institutional mechanisms, coordinated financial resources, and enhanced human resources capacity.[6]
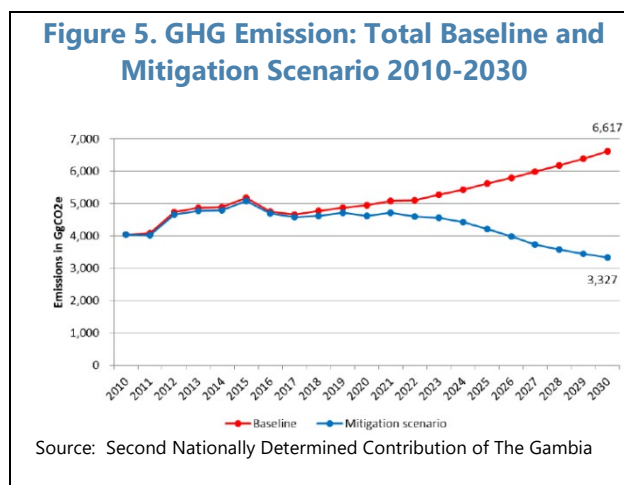
6.   The Gambia 2050 Climate Vision (2021) sets the government's vision to meet commitments made under the Paris Agreement, move towards resilience and net zero carbon emissions by 2050. The Vision underscores the high level of commitment to decarbonization and establishes the political aspiration for The Gambia to achieve net zero emissions by 2050. Four strategic axes of policy action are identified: 1) Climate-resilient food and landscapes: Agriculture, food security, forestry, and natural resources (including water, biodiversity and wildlife), 2) Low emissions and resilient economy: Energy, transport, infrastructure and the key economic sectors of tourism and financial services, 3) Climate-resilient people: Health, education, equitable social development and human settlements, and 4) Climate-aware Integrated Coastal Zone Management.[7]

---

[6] https://climate-laws.org/document/climate-change-national-policy_58ad

[7] https://climate-laws.org/document/the-gambia-2050-climate-vision_f462

7.   The Gambia has put climate change at the center of its sustainable development strategy, more purposefully than most other small countries. The Gambia's second National Determined Contribution (NDC2)[8] submitted in 2021 is assessed by the Climate Action Tracker as an overall almost sufficient, with policies and action against its fair share as 1.5°C compatible.[9] The NDC2 has a GHG reduction target of 49.7 percent by 2030, compared to the baseline emission expected to increase from 4,935 GgCO2e in 2020 to 6,617 GgCO2e in 2030. This target covers the sectors of Agriculture, Forestry and Other Land Use (AFOLU), Industrial Processes and Product Use (IPPU), Energy, Transport and Waste. The NDC2 covers the entire AFOLU sector, in line with the 2006 IPCC guidelines, while the first NDC submitted in 2016 (NDC1) addressed only agricultural emissions. The waste sector now includes emissions for both solid waste and wastewater, while the NDC1 did not include wastewater emissions.

Figure 5. GHG Emission: Total Baseline and Mitigation Scenario 2010-2030

Source: Second Nationally Determined Contribution of The Gambia

8.   The Gambia's Long-Term Climate-Neutral Development Strategy 2050 (LTS) [10] is designed to be instrumental to achieve the 2050 Climate Vision and NDC commitments. The LTS provides a comprehensive plan for reaching the net zero GHG emission by 2050 and it needs a 4 billion USD financing supports. It is at the stage of detailed cost estimations. It would be advisable to include transparent quantifiable targets for how The Gambia will switch its Land use, Land-use Change, and Forestry (LULUCF) sector from a net carbon source to a net carbon sink by 2050 or extending coverage of GHG emissions from the current 81 to 95 percent. (Climate Action Tracker, 2023)[11]

9.   The Gambia is developing its National Development Plan 2023-2027 with climate resilience as one of the pillars. The NDP aims at achieving sustainable environmental and natural resources management, enhanced climate action, and disaster risk reduction through implementation of seven program priorities, including AFOLU; sustainable waste management – waste sector adaptation; coastal resilient and adaptation; hazardous chemical and pesticides management; greening energy and transport sectors; integrated water resources management; and disaster risk reduction. The proposed interventions for coastal resilience include nature-based solution measures (re-vegetation), technique advice to reduce coastal hazard risks in settlements,

---

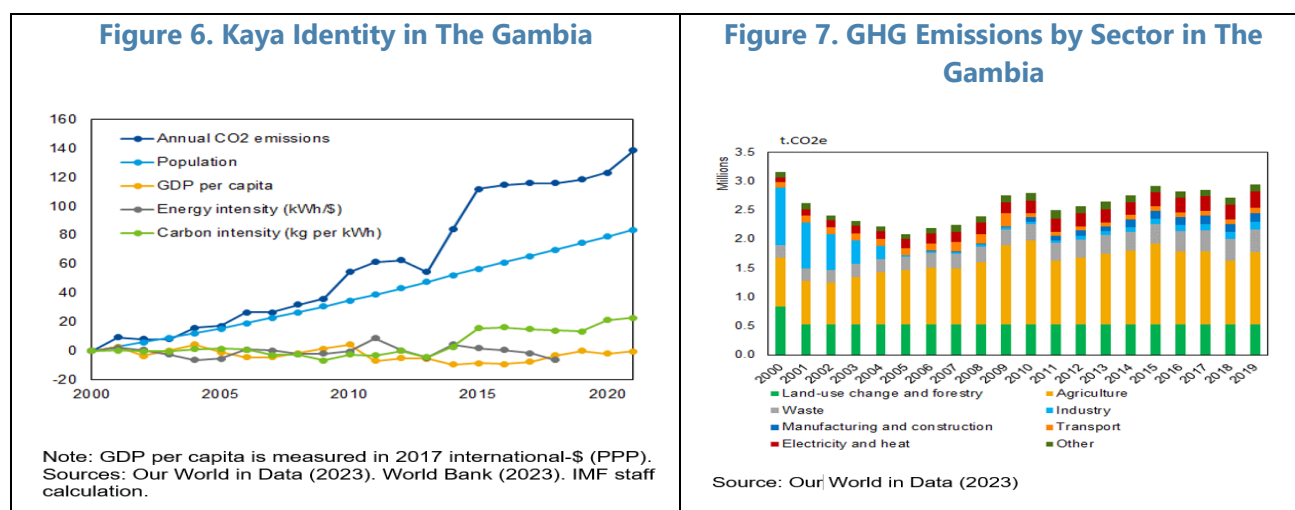[8] https://unfccc.int/documents/497523

[9] https://climateactiontracker.org/countries/gambia/

[10] https://unfccc.int/sites/default/files/resource/Long_Term_Climate_Change_Strategy_of_The_Gambia_Final.pdf

[11] https://climateactiontracker.org/countries/gambia/

creating natural sinks by avoiding infrastructural development within the adjacent wetlands, formulating and implementing climate change adaptation strategies, finalizing the Integrated Coastal Zone Management (ICZM) Bill and Strategy, etc. Disaster risk management plans include implementing measures to manage urban flood risk[12], raising risk awareness, introducing preventative measures, enhancing risk financing mechanisms through an emergency relief fund, risk transferring by developing policy framework to support insurance schemes, responding to climate related hazards through Weather Index Insurance (WII), etc.

C. Emissions and Mitigation

10. **The Gambia is a small emitter, contributing less than 0.01 percent to the global CO2e emissions.** The increase in emissions in the last two decades reflected primarily population growth and more recently carbon intensity, while energy intensity has remained broadly stable. The main source of emissions is the agricultural sector (over 40 percent of total emissions excluding LULUCF), with livestock as a major contributor. The land-use, land-use change, and forestry (LULUCF) contributed to almost one fifth to the country's total emissions in 2019. [13]
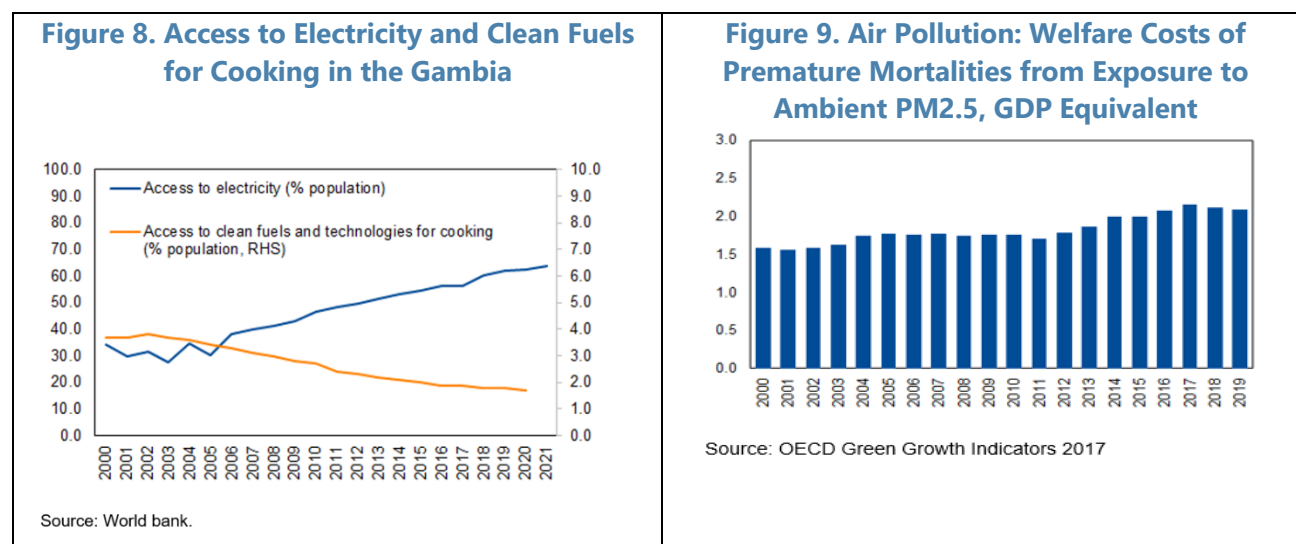
Figure 6. Kaya Identity in The Gambia	Figure 7. GHG Emissions by Sector in The Gambia

Note: GDP per capita is measured in 2017 international-$ (PPP).
Sources: Our World in Data (2023). World Bank (2023). IMF staff calculation.

Source: Our World in Data (2023)

11. **Mitigation policies would also support energy security and development.** The Gambia is highly dependent on fossil fuel imports for its energy supply, making it vulnerable to oil market disruptions. The potential discovery from ongoing oil exploration can reduce dependence on fossil fuel imports but implies risks of stranded assets in the future. Increasing its renewable energy generation would improve its energy security. It could also help to facilitate access to electricity, clean fuels for cooking, and reduce air pollution. The Gambia has been increasing its renewable

---

[12] The government has selected Kotu stream covering 2,476 ha with estimated population of more than 200,000 people as a priority project area to implement fluvial and pluvial risk reduction measures partly using nature-based solutions.

[13] The Kaya identity is a decomposition that expresses the level of energy related CO2 emissions as the product of four indicators: (1) carbon intensity (CO2 emissions per unit of total primary energy supply (TPES)), (2) energy intensity (TPES per unit of GDP), (3) gross domestic product per capita (GDP/cap) and (4) population.

energy capacity with a total of 170 MW in solar PV projects in the pipeline for 2021-2025, partially financed by the World Bank and the European Investment Bank.[14]

Figure 8. Access to Electricity and Clean Fuels for Cooking in the Gambia	Figure 9. Air Pollution: Welfare Costs of Premature Mortalities from Exposure to Ambient PM2.5, GDP Equivalent

Source: World bank.

Source: OECD Green Growth Indicators 2017

12.   Fossil fuel subsidy reforms are important to achieve greener economy and enhance the revenue mobility. Phasing out government support to fossil fuels can play a significant role in climate mitigation. This can be achieved through reducing direct budget support, as well as price reform. The Gambia has initiated the process to allow full pass-through of fuel prices as the first step. The Gambia has conducted an analysis of automatic price mechanism with the technical assistance from the IMF with a view to move to automatic price mechanism in the long-term. The electricity tariff increased by 30 percent in April 2023 to be more cost reflective and reduced indirect subsidies needed by NAWEC.

D. Adaptation

13.   The country recognizes the importance of adaptive capacity to climate change ahead of mitigation and other climate change strategies and has embarked on the development of a National Adaptation Plan (**NAP) early on**. The Gambia initiated the updating of its 2007 NAP in 2015 with funding from UNDP. A NAP roadmap was developed covering a two-year implementation period that aims to address capacity and capability gaps along the entire spectrum of policy planning, review, development, and outreach.[15] In 2017, the authority developed the Strategic Program for Climate Resilience (SPCR), which provides guidance on adaptation investment until the NAP will become the new reference framework for adaptation planning. The SPCR focuses on developing (i) an enabling environment for climate resilience, (ii) climate-resilient land use mapping, planning and information systems, (iii) climate-resilient infrastructure, services and energy systems and (iv) an integrated approaches to build rural climate resilience. Sectors that have been identified

---

[14] https://climateactiontracker.org/countries/gambia/

[15] https://www.adaptation-undp.org/sites/default/files/downloads/gambia_stocktaking_report_for_nap_and_road-map_for_cambodia_nap_gsp_and_giz_31.pdf

as in particular vulnerable to the impact of climate change are agriculture, water and sanitation, energy, and roads.

14.   Adaptation measures to adapt to climate change should be urgently taken. The adaptive response in addressing the impacts of increased flood intensity includes improving regulations to restrict agriculture and livestock grazing activities, enhancing land cover to improve water retaining, and strengthening of early-warning systems. Nonetheless, with erratic weather patterns, such as the entire season's worth of rain falling in a single day, forecasting and early warnings become more challenging. There is a pressing need to bolster the predictive capabilities. The adaptive response in addressing the increase in temperature includes increase crop diversification and rotation to reduce total crop failure and switching to drought-tolerant crop and animal species (Amuzu et al., 2018). To address water scarcity, water harvesting, and retention should be used as well as improved irrigation systems. The introduction of crop insurance policies[16] and the establishment of a National Climate Fund represent crucial tools for addressing the growing challenges posed by climate vulnerabilities. Furthermore, local authorities are in a unique position to identify the climate change adaptation strategies that align with local requirements and should be engaged to bolster adaptation capabilities.[17]

15.   Strengthening adaptation capacity in agriculture would improve output productivity and resilience, contributing to food security and SDG. The country has some climate-smart agriculture practices undertaken by smallholder farmers, however, overall adaptation capacity in agriculture remains relatively limited.[18] Scaling up existing good practices in agriculture would require more and better-structured support and investment. To reduce delivery costs and increase the reach of support to vulnerable populations, there is an urgent need to improve efficiency of support delivery. Conversely, advancements in Sustainable Development Goals (SDGs) such as promoting decent work and economic growth, ensuring quality education, and facilitating access to affordable and clean energy, can help reduce the strain on essential natural resources, like the use of firewood for cooking.

---

[16] The central bank has initiated the development of a micro insurance program to assist farmers in mitigating the financial impact of crop failure resulting from natural disasters.

[17] https://www.uncdf.org/local/homepage#:~:text=The%20Local%20Climate%20Adaptive%20Living%20(LoCAL)%20Facility%2C%20designed%20by,support%20they%20need%20to%20respond

[18] Climate-Smart Agriculture in the Gambia (2018) https://reliefweb.int/report/gambia/climate-smart-agriculture-gambia

Figure 10. Adaptation, SDG and Agriculture
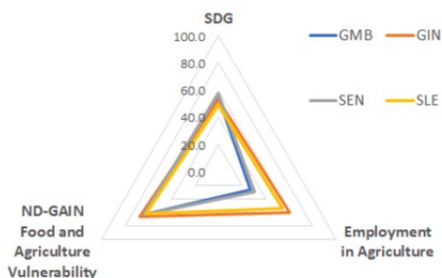
Source: ND-GAIN, World Bank.

Figure 11. Fertilizer Consumption
(kg per hectare of arable land)
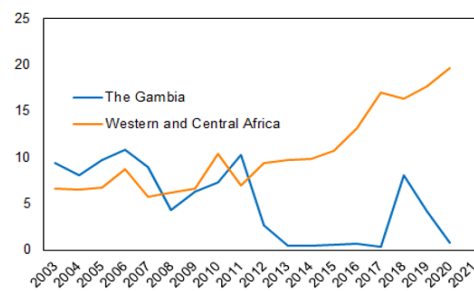

Source: World Bank WDI

E. Climate Financing

16. International financing aid plays a critical role in assisting The Gambia to achieve its goals. The multinational and biliteral donors are active in supporting The Gambia's mitigation and adaptation developments, including supports to renewable energy, marine protection areas, costal area management, etc. (Table 1). However, the low-income developing countries' climate adaptation needs are much larger than the adaptation aid flows received. The Gambia's annual adaptation annual needs are three times of the aid flow received (45 million USD versus 16 million USD) (Fiscal Monitor Oct 2020). Continued and strengthened financing aids are much needed. The international community is scaling-up the global supports, e.g., the IMF established the Resilience and Sustainability Trust (RST) in April 2022 to provide long-term financing to support policy reforms that reduce macro-critical risks associated with climate change and pandemic preparedness, and augment policy space and financial buffers to mitigate the risks arising from such long-term structural challenges (IMF, 2022).

Figure 12. Investment in Adaptation to Climate Change Needs and Aid Flows
(In hundreds of millions of Dollars)
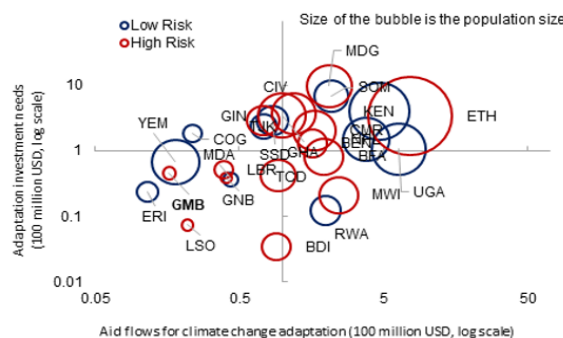
Sources: Fiscal Monitor Oct 2020 and IMF staff estimates.
Note: Aid flows for climate change adaptation (horizontal axis, in log scale) are correlated with the IMF estimates of adaptation needs (vertical axis, in log scale). The correlation between aid and needs in ratio to GDP is also high, at 0.57. The United Nations University Institute for Environment and Human Security World Risk Index for 2018 is used to measure natural disaster risk. The threshold suggested by the World Risk Report 2018 for the high- and the very high-risk group, at 7.14 percent, is used to differentiate countries into high and low risk. The size of the bubble indicates the size of population.

No.	Source and Purpose	Amounts
**Table 1. The Gambia: Selected Climate Financing Announced in 2022-2023**		
1	Grant from the Government of Canada on climate related problems	Canada Dollar 20 million
2	Grant from the West Africa Coastal Area Management funded by the World Bank	USD 45 million
3	Grant from the French Development Agency to support five marine protected areas and the communities around them	Euro 6.9 million
4	Grant from the electricity restoration and modernization project co-financed by the World Bank and the European Investment Bank to build the solar plant and an eight megawatts energy storage system	USD 27 million

F. Public Finance Management

17.   Strong Public Finance Management (PFM) can attract the climate finance aids. Cheng and Han (2023) have documented both the quality of the budget and financial management and the quality of public administration assessed in the World Bank's Country Policy and Institutional Assessments (CPIA)[19] significantly enhanced the likelihood of receiving aid, and the quality of public administration contributed to attracting larger amount of funding for adaptations. Across countries, an increase of the quality of the budget and financial management to the frontier peer level (best performance in the group) could boost the annual adaptation funds by 9.2 percent and an increase of the quality of the public administration to the frontier could boost the funds by 33.6 percent.[20] IMF (2021a) highlighted that compliance with key PFM requirements, such as effective internal and external audit functions, robust control frameworks, and effective procurement processes and procedures supports access to global climate funds. The Gambia has been seeking strengthening in these areas reflected by the new PFM Act, which would allow better access to global climate funds.

18.   Strengthening the Public Investment Management (PIM) benefits climate investments. The infrastructure investment and development are critical to The Gambia's development. To assess the institutions to deliver efficient infrastructure investments, a Public Investment Management Assessment (PIMA) was conducted with the assistance from the IMF in 2019. Since then, progresses have been made, guided by the recommendations, during the Extended Credit Facility (ECF) program 2020-2023 period, e.g., the use of the investment selection tool under The Gambia Strategic Review Board (GSRB) to strengthen appraising, prioritizing and selecting infrastructure projects; the approval of a three-year public investment program (PIP) in 2022 for selected priority sectors (i.e., health, education, agriculture, infrastructure, energy, and environment) to strengthen the investment planning while rationalizing public investment and anchoring debt sustainability. In addition, a sound PIMA paves the road to sound climate measures.

---

[19] https://databank.worldbank.org/source/country-policy-and-institutional-assessment

[20] The Gambia has both indicators assessed as 3.0 in 2018 compared to the frontier peers' scores of 4.5 for the quality of budgetary and financial management and of 4 for the quality of public administration.

19.   The Climate PIM emphasizes the climate change consideration in PIM, which is crucial for efficient green and resilient public investments. "Climate-PIMA" (C-PIMA) adds a climate-responsive dimension into the PIMA framework and assesses countries' capacity to manage climate-related infrastructure. Five institutions of public investment management are reckoned by the C-PIMA as key for climate-resilient infrastructure, including climate-aware planning, coordination between entities, project appraisal and selection, budgeting and portfolio management, and risk management while considering three cross-cutting equally important issues of the legal and regulatory framework, information systems, and government staff capacity (IMF, 2021b). A C-PIMA assessment and integrating climate considerations in PFM processes, procedures and tools can bring large benefits to The Gambia. For instance, incorporating climate considerations in project selection can enhance the attractiveness of resilient investments. Resilient and green public investments can be essential to strengthen The Gambia's adaptive capacity and support its transition to green infrastructure. Investing in resilient infrastructure results in fewer disruptions to public services, reduced exposure of assets to natural hazards, and reduced need for maintenance and reconstruction.

G. Conclusion

20.   Despite The Gambia being situated within the mid-range of countries in terms of Climate-driven risk, the impact of natural disasters on affected populations and economic losses can be both persistent and substantial, with the agriculture sector being the most vulnerable. Given the pressing urgency of climate change, the country has initiated various strategies and initiatives. Considering The Gambia's high dependence on fossil fuel imports for its energy supply, mitigation measures such as increasing renewable energy generation hold the potential to enhance energy security and reduce emissions. Equally important are fossil fuel subsidy reforms, which are crucial for transitioning to a greener economy and improving revenue mobility. Urgent adaptation actions are also imperative. These include enhancing regulations to restrict agriculture and livestock grazing activities to promote better land cover, strengthening early warning systems, increasing crop diversification and rotation, and transitioning to drought-tolerant crop and animal species. Lastly, to bridge the gap between climate financing requirements and actual aid received, The Gambia should enhance its public finance management, public investment management, and Climate Public Investment Management capabilities. These efforts will be instrumental in attracting climate financing aid and progressing towards achieving net-zero greenhouse gas emissions by 2050 while simultaneously enhancing resilience to climate risks.

21.   This annex provides the background information for a broad set climate-related diagnostic assessment in the future. The broad set assessment would be crucial to identify critical policy, legal, data, and institutional gaps in terms of climate resilience. The gaps identified would guide effectives reform measures that the climate-resilience financing, e.g., Resilience and Sustainability Facility, should be used.

References

Amuzu, J., B. P. Jallow, A. T. Kabo-Bah, and S. Yaffa, 2018, "The Climate Change Vulnerability and Risk Management Matrix for the Coastal Zone of The Gambia" Hydrology 5: 1-14. https://doi.org/10.3390/hydrology5010014

Cheng, Y. and X. Han, 2022 "Assessing the Economic Loss due to Natural Disasters from Outer Space" Climate Services 26,100286. https://www.sciencedirect.com/science/article/pii/S2405880722000048

Fiscal Monitor Oct 2020, "Public Investment for the Recovery", International Monetary Fund. https://www.imf.org/en/Publications/FM/Issues/2020/09/30/october-2020-fiscal-monitor

Han, X. and Y. Cheng, 2023 "Drivers of Bilateral Climate Finance Aid: The Roles of Paris Agreement Commitments, Public Governance, and Multilateral Institutions." *Environmental and Resource Economics* (2023). https://doi.org/10.1007/s10640-023-00783-5

International Monetary Fund, 2016, "Enhancing Resilience to Natural Disasters in Sub-Saharan Africa," in Regional Economic Outlook "Sub-Saharan Africa Multispeed Growth,"

International Monetary Fund, 2019. "Building Resilience in Developing Countries Vulnerable to Large Natural Disasters", IMF Policy Paper.

International Monetary Fund, 2021a. "Unlocking Access to Climate Finance for Pacific Island Countries", Asia-Pacific and Fiscal Affairs Departments.

International Monetary Fund, 2021b. "Strengthening Infrastructure Governance for Climate-Responsive Public Investment" IMF Policy Paper.

International Monetary Fund, 2022. "Proposal to Establish a Resilience and Sustainability Trust", IMF Policy Paper No. 2022/013 https://www.imf.org/en/Publications/Policy-Papers/Issues/2022/04/15/Proposal-To-Establish-A-Resilience-and-Sustainability-Trust-516692

Intergovernmental Panel on Climate Change (IPCC). 2014 "Climate Change 2022–Impacts, Adaptation and Vulnerability: Regional Aspects." Cambridge University Press: Cambridge, UK.

IPCC. 2021. "Climate Change 2021: The Physical Science Basis." Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change.

Koks, E.E., Rozenberg, J., Zorn, C. et al. 2019. "A Global Multi-Hazard Risk Analysis of Road and Railway Infrastructure Assets." Nature Communication 10, 2677. https://doi.org/10.1038/s41467-019-10442-3

THE GAMBIA: MACROECONOMIC AND DISTRIBUTIONAL IMPLICATIONS OF GENDER GAPS[1]

This analysis presents the current status of gender gaps in The Gambia and their implications to the economy. It examines, from a gender perspective, the impacts of the high cost of living and the determinants of poverty. Subsequently, it investigates macroeconomic and distributional gains from closing gender gaps in the labor market. The analysis finds that, despite recent government efforts in advancing gender policies, the country still suffers from substantial gender gaps in the labor market, as well as discriminatory social and political norms. Women in rural areas are hindered the most by the high cost of living, driven by recent global shocks. Closing gender gaps in the labor market would significantly boost GDP, government revenues, women's earnings, and reduce income inequality.

A. Background

1.   There is a growing literature on the positive impact of reducing gender inequality on socio-economic development and on building resilience to shocks. Some key findings from the literature can be presented as follows. Disparities in female education have negative impact on economic growth (Barro and Sala-i-Martin, 1991). Women's participation in the labor force has a strong impact on economic growth, with women's education being an important factor to increasing their labor participation (Mehrunisa, M. et al 2016). Gender gaps contribute to instability and fragility, and poor governance (Caprioli, 2005 and Branisa and others, 2013). Gender equality is associated with better macroeconomic outcomes including higher GDP, greater productivity, lower income inequality, and faster economic growth (IMF 2015, Gonzales and others 2015; Sever and al 2022). The 2012 World Development Report asserts that "gender equality is smart economics, and reforming laws for gender equality facilitates changes in social norms and actions that result not only in women's empowerment, but also in more resilient economies and stable societies".

2.   The Gambia has made progress in protecting women rights and enhancing their participation in the economy, however significant challenges remain. Women continue to suffer from discriminatory social norms, and the tripartite legal framework—comprising common, sharia, and customary law—has led to significant limitations in the legal protection of women's rights. This has resulted in limited access for women to assets such as land, and poor gender equality outcomes. The government has taken steps to address these challenges. For example, The Gambia is signatory to the Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW) and to the Protocol to the African Charter on Human and People's Rights on the Rights of Women in Africa (Maputo Protocol). The Ministry of Gender Children and Social Welfare has championed the revision of several discriminatory laws against women.[2] It has also supported the creation of the

---

[2] Women Enterprise Fund Bill; Domestic Violence (Amendment) Bill 2020; The Gambia Nationality and Citizenship Bill 2020; Skin Bleaching (Prohibition) Repeal Bill 2020; Births, Death and Marriages Bill 2020; Married Women's Property (Amendment) Bill 2020; Matrimonial Causes (Amendment) Bill 2020; Women's (Amendment) Bill 2020.

Women Enterprise Fund, which has provided support to 63,000 women across the country.[3] With IMF's support, The Gambia is piloting gender responsive budgeting in the 2024 budget.

Figure 1. Gender Inequality Indicators, 2021

Sources: UNDP and staff calculations
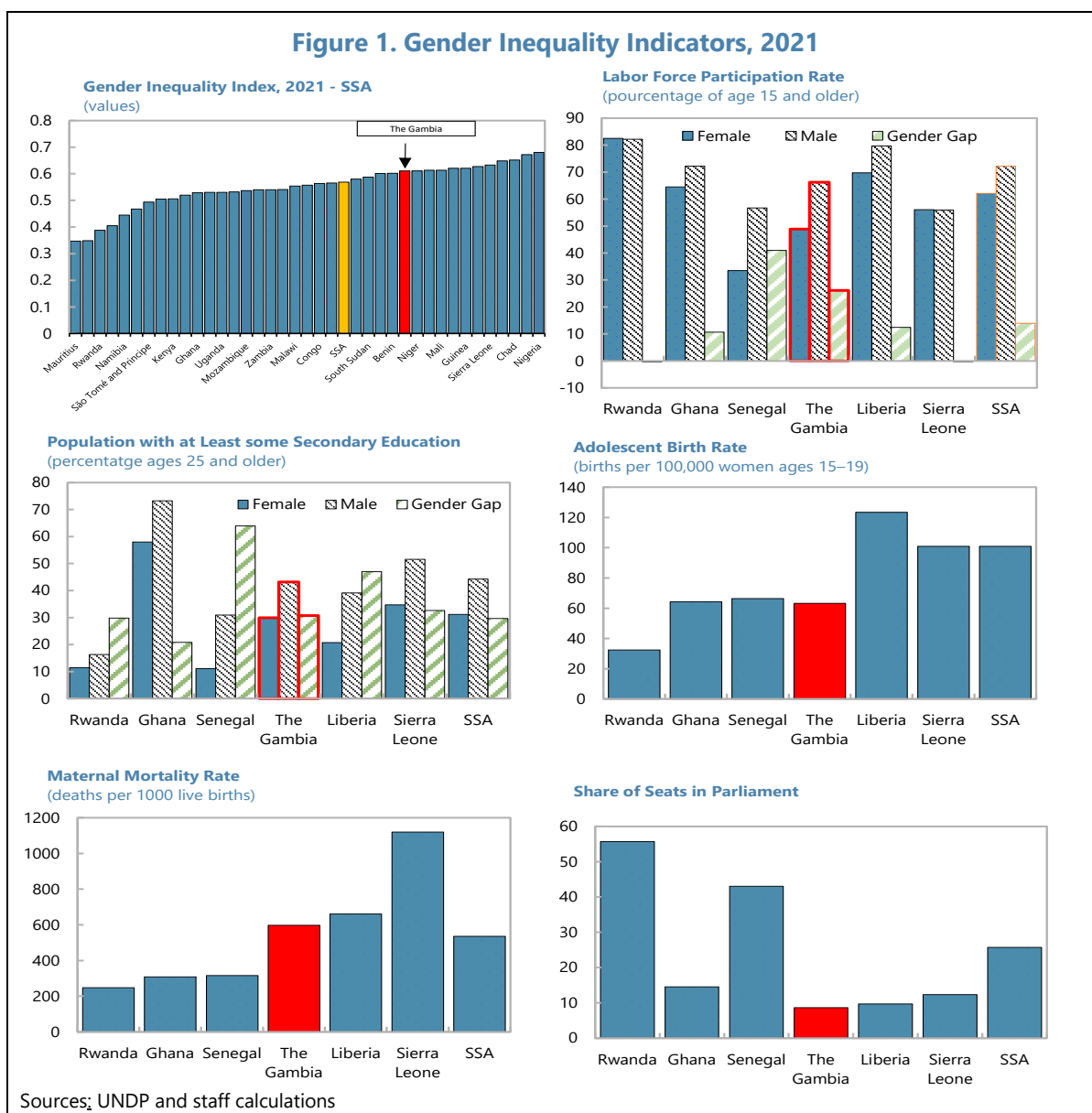
3.   Gender inequality in The Gambia remains among the highest in Sub-Saharan Africa (figure 1). The Gambia performed poorly on the 2021 gender inequality index (GII), which measures the loss in human development due to inequality between female and male achievements in various

---

[3] The Women Enterprise Fund aims to create, promote, and grow women's enterprises, foster women's self-employment, enhance job creation for Gambian women, and model an alternative funding framework for women entrepreneurs and facilitate investment in micro, small, and medium enterprises to develop linkages with large enterprises and market outlets. The WEF is also focused on facilitating investment in women's businesses through access to loans to accelerate their transition to entrepreneurship. Beneficiaries of the WEF loans are also trained in financial literacy and managerial skill prior to receiving the funds.

dimensions. The Gambia scored 0.61, worse than the Sub-Sahara average of 0.57. The female labor force participation rate (LFPR) at 48.9 percent compared with 66.3 percent for men, was the lowest compared to peer countries excluding Senegal (2021 GII report). The 2022 Labor Force Survey (LFS) revealed that 8 out of every 10 working women work in the informal sector or are engaged in informal employment. This high level of informality often translates into low wages and poor working conditions.[4] Despite excellent improvements in equality in primary school completion rate[5], women account for less than 3 percent of enrolment in higher education and gender gaps persist in the number of years of schooling. Education quality is among the lowest in the world mainly driven by high teacher absenteeism (12-30 percent) and increasing enrollment to madrassahs that may shift the focus on core competencies of English math and science (WB 2022). Despite some recent improvements, health outcome remains poor and protection against gender base violence limited by cultural factors (high level of acceptance that limit reporting) and weak enforcement of existing laws.

4.   **Access to finance and leadership positions is limited**. Women have less access to formal financial services than men, with only 2 percent of women having bank accounts compared to 8 percent of men (FinScope 2019) (Figure 5). Disparities also exist in the representation of women in managerial and political positions. The share of women in parliament is 8.6 percent compared to the SSA average of 25.7 percent. Just 3 out of 22 cabinet ministers are women, and none of the regional governors or heads of SOEs are women. Women hold only 36.1 percent of managerial positions (2022 LFS) despite accounting for more than half of the population. Improving these statistics is paramount to women's economic empowerment in The Gambia, as higher representation in politics and senior positions can increase female labor force participation and trigger representation in these and other areas.

5.   **The persistent gender gaps also make women vulnerable to shocks and crises**. The lockdown during the pandemic disproportionately affected women who are mostly employed in the informal sector. More than 9 in every 10 people reported a decrease in income between March and August 2020. Employees in the service sectors, especially in the tourism sector, which employ a large share of women (Figure 4) lost their jobs, while the rural population, who mainly live on agriculture, lost access to markets due to border closures and the ban of Lumos (rural markets). The recent increase in the cost of living following the war in Ukraine also affected margins of informal businesses and amplified vulnerabilities among women. The number of food insecure households between 2019 and 2023 increased by more than three folds with several people in food crisis.

---

[4] These include poor health and safety, job insecurity and lack of social security.

[5] The primary school completion rate for girls increased from 65 percent to 92 percent between 2010-2021 and is now higher than for boys (79 percent).

B. Modeling and Empirical Analysis

Impact Of the High Cost of Living from a Gender Perspective

6.   The impact of the high cost of living, driven by food inflation, induced by various exogenous shocks, differs across income and gender groups.[6] Accounting for food and non-food inflation separately, the per-capita household consumption is lower for the first four quintiles of the income distribution.[7] When the individual consumption is deflated by disaggregating the consumption and the inflation in food and non-food categories, the average household per capita consumption in the first four quintiles declined in 2020-2022 – in a range of 0.16 percent for the fourth quintile and 1.37 percent for the first quintile (extreme poor) – compared to when the total consumption is deflated using overall inflation. In contrast, the average consumption per capita for the fifth quintile (richest quintile) improved by about 0.85 percent because of the relatively smaller share of food items in their consumption basket. The assessment showed small differences between men and women (between 0.01 and 0.12 ppt difference) in the first four quintiles due to similar consumption patterns. In the fifth quintile, women recorded a higher increase in consumption of about 0.29 percentage point.[8] Among women, those in rural areas, living in the poor remote municipalities, and married in polygamous relation are the most adversely affected by the rapid increase in food inflation.

Table 1. The Gambia: Impact of Higher Cost of Food 1/

	Quintile-1	Quintile-2	Quintile-3	Quintile-4	Quintile-5
Total population	-1.37	-1.06	-0.60	-0.16	0.85
Men	-1.37	-1.12	-0.65	-0.19	0.71
Women	-1.36	-1.00	-0.55	-0.13	1.00

Among Women

Area		Local Government Area	
urban	0.79	Banjul	0.65
rural	-1.08	Kanifing	1.15
Matrimonial status		Brikama	0.89
Never maried	0.64	Mansakonko	-1.31
Maried	0.11	Kerewan	-1.10
Monogamous	0.28	Kuntaur	-2.08
Poly two wifes	-0.36	Janjangbureh	-1.09
Poly more than three	-0.41	Basse	-1.09

1/The values are calculated using the following ((FC/(1+FI) + NFC/(1+NFI))-TC/(1+I))/TC/(1+I)*100
C=consumption; F=food; I=inflation; NF=non-food; T=total

Figure 2. Impact of Higher Cost of Food (In Percent)

Sources: IHS-2020, GBoS, and Staff canclulation

---

[6] In the absence of reliable data on individual consumption, we relied on household consumption per capita for all household member to conduct our analysis. This approach, while providing valuable insights, may obscure within household variations in consumption patterns. We employed the individual analysis to ensure a more representative sample of women, as women-headed households account for only 19.5 percent of the weighted sample.

[7] We compared the level of consumption deflated by overall inflation to the level of consumption deflated by food and non-food inflation, respectively, for food and non-food consumption.

[8] The Gini coefficient also deteriorated by 1.3 percent with a larger deterioration of 1.4 percent for women than for men – 1.1 percent. Conducting the analysis at the house level, provides a more pronounced gender disparities in the first and second quintiles. With women-headed household experiencing larger average consumption declines than men: 1.65 percent (1.26 percent for men) and 1.31 percent (0.83 percent for men), respectively.

Determinants of Poverty from a Gender Perspective

7.   Women's levels of poverty vary across their geographical locations and the characteristics of the households (Table 1). Women in urban areas experience less absolute poverty, extreme poverty, and food poverty than men in urban areas. Living in rural areas is associated with more poverty for women. In line with the poverty results, women have higher levels of per capita consumption than men in urban and lower levels in rural areas, with individuals living in urban areas consuming more than those in rural areas. Lower levels of absolute, extreme and food poverty and higher levels of consumption are associated with being employed, higher levels of education, individuals being married or separated as compared to having never been married, and household heads being female, literate, or never been married. Individuals in smaller households, households with lower dependency ratio, households in which at least one member has access to a financial institution, and households that haven't faced a climate shock in the last year, have higher levels of consumption and face lower levels of absolute, extreme and food poverty.

**Macroeconomic Gains from Closing Gender Gaps in the Labor Market**

8.   Using a general equilibrium model calibrated to The Gambia economy[9], we conducted simulations to assess the macroeconomic and distributional impact of closing gender gaps in the labor market. The model is calibrated to match several features of The Gambia's economy, including formal and informal labor market statistics (male vs female wages and labor force participation), as well as education levels by gender and income quantile, government revenues and expenditures (as percentage of GDP), and tax rates. A detailed description of the model is provided by Malta, Martinez, and Tavares (2019). In this annex we discuss two simulations, namely: (i) equalizing female and male labor force participation rates and (ii) equalizing males and females returns from experience.

9.   Equalizing female and male labor force participation: There are many ways in the proposed framework in which female labor force participation (FLFP) can be increased, such as by reducing gender pay gaps, and therefore giving more financial incentives for women to work. In this particular simulation, we take a different approach, as we change family's utility costs related to women participating into the labor force. We assume that the extra utility cost incurred by the family when the woman works (related to women's coordination of household's activities, child and elderly care, and other unpaid household activities) reduces to zero. In this scenario, the FLFP would increase by 20 ppts, mostly among the poorer household. This would induce a large effect on GDP (11 percent increase) and would substantially help reducing inequality—the GINI index would reduce by 4.1 points, to 34.7. The higher income would boost consumption and business activities, contributing to higher government revenues (10 percent increase), due to higher VAT, income, and corporate tax collections. Note that in this exercise, we do not change gender gaps in salaries, or in

---

[9] For the calibration we used the 2018 and 2022 Labor Force Surveys, as well as the 2020-2021 Integrated Household Survey.

returns from education or experience. Therefore, gains from this simulation could be much larger if these other gaps were to be concomitantly addressed.

10.   Equalizing gains from experience: Based on the 2018 LFS, we estimated that male workers received much higher earnings by an extra year of experience than their female counterparts, particularly during their 30's and 40's (by around 4 percent per extra year for males, as opposed to nearly 0 percent for females). This mirrors the underrepresentation of women in managerial levels in The Gambia. Equalizing the gains form experience—in terms of earnings, career progression, opportunities—would encourage women to supply more hours of work, to stay longer in the labor force and to increase FLFP by 7 ppt in total. Differently from the previous simulation, this simulation would especially be more beneficial to households on the top 50 percent of the income distribution, as women with better education would be hired first. With this, women's average earnings would go up by 11 percent. GDP would grow by 10.5 percent and government revenues would increase by 8.5 percent. Figure 2 summarizes these findings, comparing both simulations.

Figure 3. Gains from the Simulations
(In percent, unless otherwise indicated)
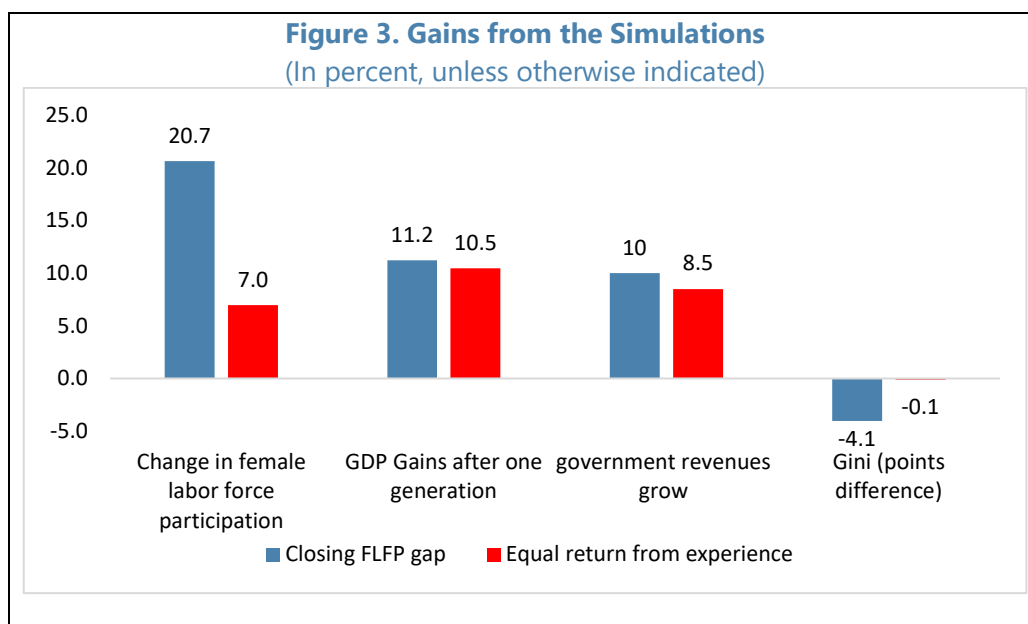
C.   Conclusions and Policy Recommendations

11.   Women contribute substantially to economic and social development but are often discriminated against in the economic sphere, particularly in the labor market. As indicated above, despite some progressive laws and policies taken by the government, there are several important gender gaps in The Gambia, which continue to affect the productivity and economic empowerment of women. Consequently, to address these gender gaps and mitigate the impact of the high cost of living on households, the government is encouraged to:

- Accelerate the process of harmonization and standardization of existing laws and circumscribing the claw-back clauses that affect women's economic empowerment in the new constitution. Revise the discretionary laws in family, inheritance, and property rights laws.

- Ensure effective implementation and strengthen enforcement of laws and government policies through a strong sensitization campaign toward religious and community leaders and the civil society in view of addressing the legal, political, social, and religious factors hindering women's full economic participation. This effort should focus on highlighting the benefits that gender sensitive policies could bring to the country, and training of judges, law enforcement offers, and the Cadis courts officers.

- Leverage the gender budgeting pilot to provide adequate funding to key sectors supporting women's health, childcare, and their participation in secondary and tertiary education (including TVET school) to enhance women's economic empowerment and create more and better jobs for women.

- Expand the WEF as a model for alternative funding framework for women entrepreneurs and facilitate their transition from the informal to formal sector, through support to small scale farmers in the agricultural value chain and leveraging digitalization to better structure micro and medium sized businesses run by women.

- Create the conditions for more women access to the formal financial sector, through the implementation of the National Financial Inclusion plan, which is focused on youth and women.

- Provide opportunity for more women in decision making including in the regions and rural area where most vulnerable women are located, and more discriminatory practices are observed.

- Expand social safety nets to vulnerable Gambians building on a reliable and dynamic social registry, invest in food systems to reduce vulnerabilities to food insecurity and implement the green recovery focus National Development Plan to build resilience to shocks.

- Finally, invest in resilient agriculture production to reduce food prices and support rural women, and contemplate a land reform in The Gambia given the importance of land as a factor of production.

Figure 4. Women Employment Status

(In percent)

Gender Segregation in Occupation

Women Status of Employment

Source: GBoS, the 2022-2023 Labor Force Survey.

Figure 5. Financial Access Strand by Gender

(In percent)

Source: FinScope-Gambia, 2019

Figure 6. Perception of Women Ownership and Governance

(In percent)

Survey of Gambians in Ownership and Governance

Asset Ownership by Gender

Source: GBoS, the 2022-2023 Labor Force Survey.

Table 2. The Gambia: Determinants of Poverty and Consumption

	Absolute	Extreme	Food	Consumption
Gender: Female	-0.113***	-0.091***	-0.069***	0.030***
	(0.0045)	(0.0062)	(0.0041)	(0.0016)
Area: Rural	0.723***	0.717***	0.207***	-0.377***
	(0.0055)	(0.0062)	(0.0055)	(0.0021)
Female X Rural	0.133***	0.072***	0.065***	-0.013***
	(0.0076)	(0.0085)	(0.0074)	(0.0029)
Marital Status: Never married omitted				
2 - Married	-0.046***	-0.111***	-0.061***	0.006***
	(0.0042)	(0.0052)	(0.0040)	(0.0016)
3 - Separated	-0.274***	-0.164***	-0.291***	0.187***
	(0.0130)	(0.0175)	(0.0110)	(0.0040)
Labor Force: Employed omitted				
2 - Unemployed	0.045***	-0.076***	-0.016*	0.008**
	(0.0078)	(0.0087)	(0.0075)	(0.0029)
3 - Outside Labor Force	0.103***	0.070***	0.091***	-0.082***
	(0.0046)	(0.0059)	(0.0043)	(0.0017)
Education	-0.033***	-0.012***	-0.027***	0.022***
	(0.0006)	(0.0007)	(0.0005)	(0.0002)
Household Head: Female	-0.266***	-0.356***	-0.124***	0.148***
	(0.0046)	(0.0062)	(0.0042)	(0.0017)
Household size	0.068***	0.047***	0.088***	-0.032***
	(0.0003)	(0.0003)	(0.0003)	(0.0001)
No access to Finance	0.801***	0.875***	0.464***	-0.357***
	(0.0038)	(0.0050)	(0.0035)	(0.0014)
Has experienced a climate shock	0.004	-0.061***	0.113***	-0.038***
	(0.0039)	(0.0046)	(0.0037)	(0.0015)
Constant	-1.335***	-2.191***	-0.894***	10.860***
	(0.0081)	(0.0102)	(0.0077)	(0.0029)
Source: Staff Calculation using the 2020 IHS				

References

Aguirre, D., L. Hoteit, C. Rupp, and K. Sabbagh, 2012, "Empowering the Third Billion. Women and the World of Work in 2012," Booz and Company

Branisa, B., S. Klasen, & M. Ziegler. 2013. "Gender Inequality in Social Institutions." World Development. Vol. 40, pp. 252-68.

Caprioli, M. 2005. "Primed for Violence: The Role of Gender Inequality in Predicting Internal Conflict." International Studies Quarterly. Vol. 49, pp. 161-78

Gonzales, C., S. Jain-Chandra, K. Kochhar, and M. Newiak, M., and T. Zeinullayev. 2015b. "Catalyst for Change: Empowering Women and Tackling Income Inequality." Washington, DC: IMF, 2015. Staff Discussion Note 15/20.

IMF, 2015. "Regional Economic Outlook. Sub-Saharan Africa. Dealing with the Gathering Clouds." Washington, D.C.: International Monetary Fund. October.

International Monetary Fund (IMF). 2019a. "IMF 2019 Article IV Report for Nigeria, Selected Issues." IMF Country Report 19/93, International Monetary Fund, Washington, DC.

International Monetary Fund (IMF). 2021. "IMF 2021 Article IV Report for Kenya." IMF Country Report 21/276, International Monetary Fund, Washington, DC.

Kazandjian, R., L. Kolovich, K. Kochhar, and M. Newiak. 2016. "Gender Equality and Economic Diversification." IMF Working Paper 16/140. Washington, D.C.: International Monetary Fund

Malta, V., A. Martinez, and M. M. Tavares. 2019. "A Quantitative Analysis of Female Employment in Senegal." IMF Working Paper 19/241, International Monetary Fund, Washington, DC.

World Bank. 2012. "World Development Report: Gender Equality and Development." Washington, D.C.: World Bank Group.

Rasmane Ouedraogo and Diego Gomes, 2023 "Macroeconomic Gains from Closing Gender Educational Gaps in Niger" IMF SIP/2023/006, International Monetary Fund, Washington, DC.

World Bank 2022 "Securing a Robust and Inclusive Recovery: The Gambia Poverty and Gender Assessment 2022" Washington, D.C.: World Bank Group.

The Ministry of Women Children and Social Welfare (MOWCSW) 2019 "National Review Report on Implementation of the Beijing Declaration and Platform for Action (BPFA) +25"; The Gambia

UN Women 2020 "Mapping and Analysis of the Laws of The Gambia from a Gender Perspective: Towards Reversing Discrimination in Law"

Can Sever, Edward Gemayel. "Legal Gender Equality as a Catalyst for Convergence". IMF Working Paper. WP/22/155 (2022)

Gene M. Grossman and Elhanan Helpman. "Innovation and Growth in the Global Economy". 384 pp., 6 x 9 in, Hardcover. ISBN : 9780262071369 (1991)

Nabaneh - 'Women's Political Participation and Representation in The Gambia: One step forward or two back?' (2014)

Robert J. Barro and Xavier Sala-i-Martin. "Convergence across States and Regions". Journal of Political Economy, Vol. 100, No. 2 (Apr. 1992), pp. 223-251 (29 pages) Published By: The University of Chicago Press

UNDP, "gender equality strategy, 2022–2025". Executive Board of the United Nations Development Programme, the United Nations Population Fund, and the United Nations Office for Project Services (11 April 2022)

UN-Women. "Statement policy and texts outcome of Beijing+5". ISBN: 978-1-936291-95-3. (1995)

Draft National Development Plan 2023-2027, p 197.

The World Bank 'Women's economic empowerment through public procurement—A solution multiplier'.

The World Bank. "*The Gambia Gender and Poverty Assessment 2022—Securing a Robust and Inclusive Growth*" World Bank Poverty Team, June 2022.